

We claim:

*Sub A<sup>3</sup>*

1. A method for assembling interior vehicle trim parts in which a first trim part is disposed adjacent a second trim part and in which a bead of buffer material is provided between the first and second trim parts to reduce noises such as buzzes, squeaks and rattles produced by contact and relative motion between the first and second trim parts, the method including the steps of:
- 5 providing the first trim part having a mating surface configured to lie alongside a mating surface of the second trim part when the first and second trim parts are disposed adjacent one another in a vehicle;
- 10 forming a recess in the mating surface of the first trim part; and
- providing buffer material in the recess so as to provide a bead of buffer material on the mating surface of the first trim part; and
- allowing the bead to mechanically connect to the first trim part by
- 15 hardening of the buffer material within the recess.

2. The method of claim 1 in which the step of forming a recess includes forming the recess to include an undercut.

*Sub H<sup>1</sup>*

- 20 3. The method of claim 1 in which the step of providing buffer material in the recess includes the steps of:
- providing an applicator comprising an extrusion head; and
- extruding buffer material through the extrusion head.
- 25 4. The method of claim 1 in which the step of providing buffer material includes providing an elastomeric material.
5. The method of claim 1 in which the step of providing buffer material includes selecting the buffer material from a group consisting of
- 30 thermoplastic elastomers and thermosetting elastomers.

6. The method of claim 5 in which the step of providing buffer material includes selecting thermoplastic urethane as a buffer material.

*Sub F<sup>2</sup>*  
5. 7. The method of claim 1 in which the step of providing buffer material includes the steps of:

providing a robot operatively connected to an applicator;  
connecting a source of buffer material to the applicator, the buffer material being in fluid communication with the applicator; and  
operating the robot to move the applicator in spaced generally parallel  
10 relationship with the mating surface of the first trim part while projecting buffer material into the recess and onto the mating surface.

8. The method of claim 1 in which the step of forming a recess includes the steps of:  
15 providing a robot operatively connected to a recess-forming tool; and  
operating the robot to move the forming tool into and along the mating surface of the first trim part.

*Sub A<sup>4</sup>*  
20. 9. The method of claim 8 in which the step of providing buffer material includes the steps of:

operatively connecting an applicator to the robot adjacent the recess-forming tool;  
connecting a source of buffer material in fluid communication with the applicator; and  
25 operating the robot to simultaneously move the forming tool into and along the mating surface of the first trim part while moving the applicator in spaced generally parallel relationship with the mating surface and in trailing relationship to the recess-forming tool, the trailing applicator providing buffer material in the recess formed by the preceding forming tool so as to and overfill  
30 the recess and provide a bead of buffer material on the mating surface of the first trim part.

*Sub H'*

(10). The method of claim 1 in which the step of forming a recess includes providing a forming tool comprising a router having a router bit configured to form a recess of desired cross sectional shape.

5 *Sub E'*

11. The method of claim 1 including the additional step of mounting the second trim part in an opening in the first trim part, the mating surfaces being an outer peripheral edge of the second trim part and an inner edge of the first trim part surrounding and defining the opening in the first trim part, the additional step following the step of allowing the buffer material to mechanically connect to the first trim part.

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*Sub H'*

12. Bead forming apparatus for forming a bead of buffer material on a mating surface of an automotive trim part, the apparatus comprising:

a recess-forming tool configured to form a recess in the mating surface;

15 an applicator configured to provide buffer material in the recess and to form a bead on the mating surface by overfilling the recess;

a common mount supporting both the recess-forming tool and the applicator; and

20 a drive operatively connected to the mount and configured to move the recess-forming tool and the applicator simultaneously with respect to the mating surface, the applicator trailing the recess-forming tool.

13. The bead forming apparatus of claim 12 in which the recess-forming tool is configured to form a recess that includes an undercut.

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14. The bead forming apparatus of claim 13 in which the forming tool comprises a router.

15. The bead forming apparatus of claim 12 in which the applicator comprises an extruder head configured to extrude buffer material into the recess and onto the mating surface

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16. The bead forming apparatus of claim 12 in which the drive includes a robot having a multi-axis drive system.

17. The bead forming apparatus of claim 16 in which the recess-  
5 forming tool and applicator are mounted on an arm of the robot.

18. The bead forming apparatus of claim 17 in which:  
the applicator is movably mounted relative to the recess-forming tool; and  
the robot multi-axis drive system is configured move the applicator  
independent of the recess-forming tool while simultaneously moving the recess-  
forming tool and the applicator along the mating surface.

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